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DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS

LRL-02080 (Dec 1994)

Superseding
ORL-02080 (April 1993)

GUIDE SPECIFICATION FOR MILITARY CONSTRUCTION
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SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02080

REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING MATERIALS

12/94

-- End of Section Table of Contents --

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SECTION 02080

REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING MATERIALS
12/94

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NOTE A: This guide specification covers the requirements for removal and disposal of asbestos materials and is to be used in the preparation of project specifications in accordance with ER 1110-345-720.

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PART 1 GENERAL

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NOTE: See Additional Note A.

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1.1 REFERENCES

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NOTE: The listed designations for publications are those that were in effect when this guide specification was being prepared. These designations are updated when necessary by Notice, and references in project specifications need be no later than in the current Notice for this guide specification. To minimize the possibility of error, the letter suffixes, amendments, and dates indicating specific issues should be retained in paragraph 1 and omitted elsewhere in the project specifications.

****

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) PUBLICATIONS:

ANSI Z9.2-79 Fundamentals Governing the Design and Operation of Local Exhaust Systems

ANSI Z88.2-80 Practices for Respiratory Protection

CODE OF FEDERAL REGULATIONS (CFR) PUBLICATIONS:

29 CRF Part 1910 Occupational Safety and Health Standards

29 CFR Part 1926 Safety and Health Regulations for Construction

40 CFR 61, Subpart A General Provisions

40 CFR 61, Subpart M National Emission Standard for Asbestos

40 CFR 241 Guidelines for the Land Disposal of Solid Wastes

40 CFR 257 Criteria for Classification of Solid Waste Disposal Facilities and Practices

40 CFR 763 , Subpart E Asbestos Containing Materials in Schools

FEDERAL STANDARD (FED. STD.)

Fed. Std. 595A Colors & Notices 2, 3, 4, 5, 7 & Errata, 8

KENTUCKY ADMINISTRATIVE REGISTER (KAR)

401 KAR 57:011 Asbestos Standards

401 KAR 63:042 Requirements for Asbestos Abatement Entities

MICHIGAN COMPLIED LAWS (MCL)

ACT135 Asbestos Abatement Contractor's Licensing Act (ACT 135 of the Public Acts of 1986) and Amendments

MILITARY STANDARD (MIL. STD.)

MIL-STD-101B Color Code for Pipelines and for Compressed-Gas Cylinders

..REFEND
Manual of Analytical Methods, 3rd Ed., Vol. 1, Physical and Chemical Analysis Method (P&CAM)

Method 7400	Fibers
Method 7402	Asbestos Fibers

UNDERWRITERS LABORATORIES, INC. (UL) PUBLICATIONS

UL 586	1986 High Efficiency Particulate, Air Filter

1.2 DESCRIPTION OF WORK

The work covered by this section includes the handling of [friable] [and] nonfriable] materials containing asbestos which is encountered during removal and demolition operations and the incidental procedures and equipment required to protect workers and occupants of the building or area, or both, from contact with airborne asbestos fibers. The work also includes the disposal of the removed asbestos-containing materials. Perform work in accordance with 29 CFR 1926.1101; 40 CFR 61, Subpart A; 40 CFR 61, Subpart M; and the requirements specified herein. The asbestos work includes the demolition and removal of the following:

Friable ACM_____
Category I Nonfriable ACM_____
Category II Nonfriable ACM_____

located _____

1.2.1 Asbestos Survey

****
NOTE: Include paragraph 1.2.1 and bracketed portions of 1.2.2 if there is ACM data and include report and data at end of section.
****

[An asbestos Survey was conducted in the contract work area(s) to identify the presence of asbestos containing materials as described in 1.2 above. The data collected is contained in the ASBESTOS SURVEY REPORT at the end of this section.]

1.2.2 Unidentified ACM

If ACM not covered by [the ASBESTOS SURVEY REPORT,] the drawings or the specifications is encountered, the Contractor shall stop work and immediately notify the Contracting Officer. Upon direction from the Contracting Officer, the Contractor may be required to conduct sampling and testing of these suspect materials in accordance with the Industrial Hygienist's recommended procedures [or in a manner similar to that described in the ASBESTOS SURVEY REPORT]. Payment for this additional work will be handled under the CHANGES clause of SECTION I.

1.3 DEFINITIONS

1.3.1 Action level

An airborne concentration of asbestos of 0.1 fiber (longer than 5 micrometers) per cubic centimeter (f/cc) of air calculated as an eight-(8)-hour time weighted-average (TWA).

1.3.2 Aggressive method

Removal or disturbance of building material by sanding, abrading, grinding or other method that breaks, crumbles, or disintegrates intact Asbestos Containing Material (ACM).

1.3.3 Amended Water

Water containing a wetting agent or surfactant.

1.3.4 Area Monitoring

Sampling of asbestos fiber concentrations within the regulated area and outside the regulated area which is representative of the airborne concentrations of asbestos fibers which may reach the breathing zone.

1.3.5 Asbestos

Includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that has been chemically treated and/or altered. For purposes of this standard, "asbestos" includes PACM, as defined below.

1.3.6 Asbestos Abatement Contractor

A business entity certified, licensed, or accredited by the state in which a response action involving asbestos-containing building material that is friable, or expected to become friable during the response action, is undertaken.

1.3.7 Asbestos Containing Material (ACM)

Material composed of asbestos of any type and in an amount greater than 1 percent by weight, either alone or mixed with other fibrous or nonfibrous materials.

1.3.8 Asbestos Fibers

Asbestos fibers having length-to-diameter ratio of at least 3 to 1 and 5 micrometers or longer as counted in the NIOSH Method 7400 or Method 7402 procedure using either phase contrast light microscopy (PCM) or transmission electronic microscopy (TEM).

1.3.9 Asbestos Permissible Exposure Limit (PEL)

Exposure to an airborne concentration of asbestos fibers not to exceed 0.1 fiber per cubic centimeter of air as an eight-(8)-hour time weighted

average (TWA).

1.3.10 Authorized Person

Any person authorized and required by work duties to be present in regulated areas.

1.3.11 Breathing Zone

A hemisphere forward of the shoulders with a radius of approximately 6 inches to 9 inches.

1.3.12 Category I Nonfriable ACM

Category I Nonfriable ACM includes asbestos-containing packing, gaskets, resilient floor covering, and asphalt roofing products.

1.3.13 Category II Nonfriable ACM

Category II Nonfriable ACM includes any asbestos-containing material not included in Category I that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

****
NOTE: Use the following three paragraphs for asbestos projects in Kentucky.
****

1.3.14 Certified Asbestos Supervisor

One certified by the Commonwealth of Kentucky or shows certification that one has satisfactorily passed an examination concerning "Supervision of Asbestos Abatement Contracts" or similar title training. This training must have been approved by the Commonwealth of Kentucky and/or the Environmental Protection Agency (EPA).

1.3.15 Certified Asbestos Worker

One certified by the National Asbestos Council and hold current cards illustrating the board number.

1.3.16 Certified Licensed Contractor

A Contractor who has been [certified by the Commonwealth of Kentucky per 401 KAR 63:042 and 401 KAR 57:011.] [licensed by the State of Michigan per the Asbestos Abatement Contractor's Licensing Act (ACT 135 of the Public ACTs of 1986).]

1.3.17 Certified Industrial Hygienist (CIH)

One certified in the comprehensive practice of industrial hygiene by the American Board of Industrial Hygiene.

1.3.18 Class I Asbestos Work

Activities involving the removal of Thermal System Insulation (TSI) and surfacing ACM and PACM.

1.3.19 Class II Asbestos Work

Activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but it not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.

1.3.20 Class III Asbestos Work

Repair and maintenance operations, where "ACM", including thermal system insulation and surfacing material, is likely to be disturbed.

1.3.21 Clean Room

An uncontaminated room having facilities for storage of employees' street clothing and uncontaminated materials and equipment.

1.3.22 Competent Person

In addition to the definition in 29 CFR 1926.32(f), one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32 (f); in addition, for Class I and Class II work, one who is specially trained in a training course which meet the criteria of EPA's Model Accreditation Plan (40 CFR 763) for project designer or supervisor, or its equivalent and, for Class II who is trained in an operations and maintenance (O&M) course developed by EPA (40 CFR 763.92 (a)(2)).

1.3.23 Critical Barrier

One or more layers of plastic sealed over all openings into a work area or any other similarly placed physical barrier sufficient to prevent airborne asbestos in work area from migrating to an adjacent area.

1.3.24 Decontamination Area

An enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower area, and clean room which is used for the decontamination of workers, materials and equipment contaminated with asbestos.

1.3.25 Demolition

The wrecking or taking out of any load-supporting structural member and any related razing, removing, or stripping of asbestos products.

1.3.26 Disturbances

Contact which releases fibers from ACM or PACM or debris containing ACM or

PACM. This term includes activities that disrupt the matrix of ACM or PACM, render ACM or PACM friable, or generate visible debris. Disturbance includes cutting away small amounts of ACM and PACM, no greater than the amount which can be contained in one standard sized glove bag or waste bag in order to access a building component. In no event shall the amount of ACM or PACM so disturbed exceed that which can be contained in one glove bag or waste bag which shall not exceed 60 inches in length and width.

1.3.27 Employee Exposure

That exposure to airborne asbestos that would occur if the employee were not using respiratory protective equipment.

1.3.28 Encapsulant

A liquid material which can be applied to ACM which controls the possible release of asbestos fibers from the material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).

1.3.29 Encapsulate

The process whereby an encapsulant is applied to ACM to control the release of asbestos fibers into the air.

1.3.30 Equipment Room (Change Room)

A contaminated room located within the decontamination area that is supplied with impermeable bags or containers for the disposal of contaminated protective clothing and equipment.

1.3.31 Fiber

A particulate form of asbestos, 5 micrometers or longer, with a length-to-diameter ratio of at least 3 to 1.

1.3.32 Friable Asbestos Material

Material that contains more than 1 percent asbestos by weight which can be crumbled, pulverized, or reduced to powder by hand pressure when dry.

1.3.33 Glovebag Technique

A method with limited applications for removing small sections of asbestos-containing material from HVAC ducts, short piping runs, valves, joints, elbows, and other nonplanar surfaces in a noncontained regulated area. The glovebag is constructed and installed in such a manner that it surrounds the object or material to be removed and contains all asbestos fibers released during the removal process. All workers who are permitted to use the glovebag technique must be highly trained, experienced and skilled in this method.

1.3.34 Glovebag

An impervious plastic bag-like enclosure affixed around an asbestos-containing material, with glove-like appendages through which material and tools may be handled. Shall be made of 6 mil thick plastic and shall be seamless at the bottom.

1.3.35 HEPA Filter Equipment

High-efficiency particulate air (HEPA) filtered vacuuming equipment with a UL 586 filter system capable of collecting and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micrometer diameter particles or larger.

1.3.36 Homogeneous Area

An area of surfacing material or thermal system insulation that is uniform in color and texture.

1.3.37 Intact

ACM which has not been crumbled, pulverized, or otherwise deteriorated so that it is no longer likely to be bound with its matrix.

1.3.38 Negative Initial Exposure Assessment

A demonstration which complies with the criteria in this section, that employee exposure during an operation is expected to be consistently below the PEL's.

1.3.39 Nonfriable Asbestos Material

Material that contains asbestos in which the fibers have been locked in by a bonding agent, coating, binder, or other material so that the asbestos is well bound and may not release fibers in excess of the action level during any appropriate use, handling, storage, transportation, or processing. Nonfriable asbestos material is considered hazardous during removal and disposal procedures.

1.3.40 (PACM) Presumed Asbestos Containing Material

Thermal system insulation and surfacing material found in buildings constructed no later than 1980.

1.3.41 Personal Monitoring

Sampling of airborne asbestos fiber concentrations within the breathing zone of an employee.

1.3.42 Prior Experience

Experience required of the Contractor, his employees, and his Industrial Hygienist on asbestos projects of similar nature and scope to insure capability of performing the asbestos removal in a satisfactory manner. Similarities shall be in areas related to material composition, project size, number of employees and the engineering work practice and personal protection controls required.

1.3.43 Regulated Areas

An area established to demarcate areas where Class I, II and III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work accumulate; and a work area within which airborne concentrations of asbestos, exceed or there is a reasonable possibility they may exceed the permissible exposure limit.

1.3.43.1 Enclosed Regulated Area

A regulated area which has been isolated by physical boundaries to prevent the spread of asbestos dust, fibers, or debris. A local exhaust system is required.

1.3.44 Regulated Asbestos-Containing Material (RACM)

(a) Friable asbestos material

(b) Category I nonfriable ACM that has become friable

(c) Category I nonfriable ACM that will become or has been subjected to sanding, grinding, cutting, or abrading; and

(d) Category II nonfriable ACM that has a high probability of becoming crumbled, pulverized, or reduced to powder by the forces acting on the material in the course of the demolition or renovation operation.

1.3.45 Thermal System Insulation (TSI)

ACM applied to pipes, fittings, boilers, breeching, tanks, ducts or other structural components to prevent heat loss or gain.

1.3.46 Thermal System Insulation ACM

Thermal system insulation which contains more than 1% asbestos.

1.3.47 Time Weighted Average (TWA)

The TWA is an 8-hour time weighted average of airborne concentration of fibers per cubic centimeter of air.

1.4 SUBMITTALS

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NOTE: Submittals must be limited to those necessary for adequate quality control. The importance of an item in the project should be one of the primary factors in determining if a submittal for the item should be required.

****

The following shall be submitted in accordance with Section 01330

SUBMITTALS to and approved by the Contracting Officer prior to commencing work involving asbestos materials:

SD-01, Data

Local Exhaust Equipment; [_____].

HEPA Vacuum Equipment; [_____].

Respirators; [_____].

Pressure Differential Monitor; [_____].

Training Data; [_____].

Submit signed and dated certificates by each employee that the employee has received training for a minimum of 8 hours in the proper handling of materials that contain asbestos; understands the health implications and risks involved, including the illnesses possible from exposure to airborne asbestos fibers; understands the use and limits of the respiratory equipment to be used; understands the results of monitoring of airborne quantities of asbestos as related to health and respiratory equipment; and understands engineering and other hazard control techniques and procedures. (See end of this Section for example certificates.)
SD-08 Statements

Testing Laboratory; [_____].

Submit the name, address, and telephone number of the testing laboratory selected to perform the monitoring, testing, and reporting of airborne concentrations of asbestos fibers along with certification that persons counting the samples have been judged proficient by successful participation within the last year in the National Institute for Occupational Safety and Health (NIOSH) Proficiency Analytical Testing (PAT) Program.

Industrial Hygienist; [_____].

Submit the name, address, and telephone number of the Industrial Hygienist selected to prepare the asbestos plan, direct monitoring and perform training, and a certification that the Industrial Hygienist is certified by the American Board of Industrial Hygiene, including certification number and date and is experienced in asbestos removal activities.

Prior Experience; [_____].

****

NOTE: Use version (1) when the asbestos abatement Contractor is likely to be the Prime Contractor (i.e., for projects where asbestos abatement work is the predominant task). Use version (2) when the asbestos abatement effort is only a small portion of the work (i.e., where the asbestos abatement contractor will likely be a sub to the Prime

Contractor).
****

(1) [Within five (5) working days after bid opening (See Section L, Para. 9.) the apparent low bidder, shall furnish for Government approval (for himself or for his selected asbestos removal subcontractor) written demonstration of successfully completed asbestos abatement projects of similar nature and scope. A short summary of three (3) asbestos abatement projects performed shall include:]

or

(2) [As evidence that the asbestos removal effort will be accomplished by trained and competent personnel totally familiar with safe and legal asbestos working practices, the Contractor shall furnish for Government approval (for himself or for his selected asbestos removal subcontractor) written demonstration of successfully completed asbestos abatement projects of similar nature and scope. A short summary of three (3) asbestos abatement projects performed shall include:]

a. The name, address, and telephone number of the contact person (someone specifically familiar with the Contractor's work). If available, include copies of letters of reference from previous users of service.

b. A short description of the type of removal (e.g. pipe lagging, sprayed girders and/or ceilings, transite siding, etc.), its extent (square feet, linear feet), and days to complete (scheduled and actual),

c. Documentation of any licenses or certifications as an asbestos abatement Contractor in the jurisdiction covered. If none, a negative response is required.

d. The Contractor shall certify that the firm and its employees are familiar with regulations of the Occupational Safety and Health Administration (OSHA) and the U.S. Environmental Protection Agency (EPA) cited in the project specification and related to asbestos abatement. [Individuals who conduct a response action involving ACM in this contract shall be required to take the appropriate initial and annual refresher training courses and acquire annual accreditation from the Michigan Department of Public Health (MDPH). The Contractor shall submit proof of licensure and accreditation by the State of Michigan per the Asbestos Abatement Contractor Licensing Act (ACT 135 of the Public ACTs of 1986) and 40 CFR Part 763-E, Appendix C (Asbestos Model Accreditation Plan).]

e. The Contractor shall further document that at least one on-site representative, such as a foreman or management-level person or other authorized representative, trained in the provisions of this regulation and the means of complying with them, is present. Every 2 years, the trained on-site individual shall receive refresher training in the provisions of this regulation. The required training shall include as a minimum: applicability; notifications; material identification; control procedures for removals including, at least, wetting, local exhaust ventilation, negative pressure enclosures, glove-bag procedures, and High Efficiency Particulate Air (HEPA) filters; waste disposal work practices; reporting and recordkeeping; and asbestos hazards and worker protection. Evidence

that the required training has been completed shall be posted and made available for inspection by the NESHAPS-administering agency at the demolition or renovation site.

f. A notarized statement, signed by an officer of the asbestos abatement company, containing the following information: (If none, a negative reply is required.)

(1) A record of any citations issued by Federal, State or local regulatory agencies relating to asbestos abatement activity. Include projects, dates and resolutions.

(2) A list of penalties incurred through noncompliance with asbestos abatement project specifications including liquidated damages, overruns in scheduled time limitations and resolutions.

(3) Situations in which an asbestos related contract has been terminated including projects, dates and reasons for terminations.

(4) A listing of any asbestos-related legal proceedings/claims in which the Contractor (or employees scheduled to participated in this project) have participated or are currently involved. Include descriptions of role, issue and resolution to date.

****

NOTE: Delete the following two paragraphs if version 2 of paragraph 1.4.2. is used.

****

Failure or inability to comply with Para. a., b., c., d., e., or f. may result in rejection of Contractor's bid.

Poor performance as reflected by Para. b. (scheduled versus actual completion times), or f. may result in rejection of Contractor's bid.

Asbestos Plan; [_____].

Submit a detailed Plan of the work procedures to be used in the removal and disposal of materials containing asbestos and include an explanation of the Initial Exposure Assessment. The Plan shall be prepared, signed, and sealed, including certification number and date, by the Contractor's Industrial Hygienist. Such Plan shall include a sketch showing the location, size, and details of regulated areas, location and details of the decontamination area, layout of decontamination area, and locations of local exhaust equipment. The Plan shall also include interface of trades involved in the construction, sequencing of asbestos-related work, disposal plan, type of wetting agent to be used, air monitoring, respirators, protective equipment, pressure differential monitoring device, and a detailed description of the method employed in order to control pollution.

The Plan shall be approved by the Contracting Officer prior to the start of any asbestos work. Prior to beginning work, the Contractor shall meet with the Contracting Officer to discuss in detail the Asbestos Plan, including work procedures and safety precautions.

Notification Requirements; [_____].

****

NOTE: The following section is intended to cover both demolition and renovation projects where the abatement of ACM is involved. (Includes both regulated and non-regulated ACM). For projects where the combined amount of RACM to be removed is:

(i) Less than 80 linear meters (260 linear feet) on pipes and less than 15 square meters (160 square feet) on other facility components, and

(ii) Less than one cubic meter (35 cubic feet) off facility components where the length or area could not be measured previously or there is no asbestos.

use paragraphs a.(1), (2), (3); b.; c. (1 through 7), (13).

For projects where the combined amount of RACM to be removed is:

(i) At least 80 linear meters (260 linear feet) on pipes or at least 15 square meters (160 square feet) on other facility components, or

(ii) At least 1 cubic meter (35 cubic feet) off facility components where the length or area could not be measured previously.

use all paragraphs.

At end of section, retain only the version of "ASBESTOS REMOVAL REPORT FORM" for the appropriate state in which the work is to be performed.

Projects in Kentucky require special editing of paragraph a. Initial Notification.

****

a. Initial Notification

The Contractor shall:

(1) [Provide the U.S. Environmental Protection Agency (EPA) Regional NESHAPS-administering agency with the notice of intention to demolish or renovate. The address is as shown on the "ASBESTOS REMOVAL REPORT FORM", attached to this specification section.] [Notify the Kentucky Division for Air Quality of its intent to remove asbestos using the attached "ASBESTOS REMOVAL REPORT FORM". Notification shall be in accordance with Kentucky Administration Regulations 401 KAR 57:011 and Code of Federal Regulations 40 CFR 61, Subpart M, contained herein.] Copies of this form and any

renotification forms shall be furnished to the [Kentucky Occupational Safety and Health Division (KOSHD)], [the Fort Knox DEH - Environmental Management Division], [and] the Contracting Officer. Work shall not commence on any dates other than those stated in the notification without renotification of all parties. Delivery of the notice by U.S. Postal Service, commercial delivery service, or hand delivery is acceptable. [Notify the local fire department 3 days prior to removing fireproofing material from the building. Also notify the local fire department when the new fireproofing material has been applied.]

(2) Update notice, as necessary, including when the amount of asbestos affected changes by at least 20 percent.

(3) Postmark or deliver the notice as follows:

At least 10 working days before asbestos stripping or removal work or any other activity begins such as site preparation that would break up, dislodge or similarly disturb asbestos material.

b. Renotification

For asbestos stripping or removal work in a demolition or renovation operation that will begin on a date other than the one contained in the original notice, notice of the new start date must be provided to the NESHAPS-administering agency as follows:

(1) When the asbestos stripping or removal operation or demolition operation covered by this paragraph will begin after the date contained in the notice,

(a) Notify the NESHAPS-administering agency of the new start date by telephone as soon as possible before the original start date, and

(b) Provide the NESHAPS-administering agency with a written notice of the new start date as soon as possible before, and no later than, the original start date. Delivery of the updated notice by the U.S. Postal Service commercial delivery service, or hand delivery is acceptable.

(2) When the asbestos stripping or removal operation or demolition operation covered by this paragraph will begin on a date earlier than the original start date, provide the NESHPAS-administering agency with a written notice of the new start date at least 10 working days before asbestos stripping or removal work begins.

(3) In no event shall an operation covered by this paragraph begin on a date other than the date contained in the written notice of the new start date.

c. Notification Information

The following shall be included in the notice:

(1) An indication of whether the notice is the original or a revised notification.

(2) Name, address, and telephone number of both the facility owner and operator and the asbestos removal contractor.

(3) Type of operation: demolition or renovation.

(4) Description of the facility or affected part of the facility including the size (square meters [square feet] and number of floors), age, and present and prior use of the facility.

(5) Procedure, including analytical methods, employed to detect the presence of RACM and Category I and Category II nonfriable ACM.

(6) Estimate of the approximate amount of RACM to be removed from the facility in terms of length of pipe in linear meters (linear feet), surface area in square meters (square feet) on other facility components, or volume in cubic meters (cubic feet) if off the facility components. Also, estimate the approximate amount of Category I and Category II nonfriable ACM in the affected part of the facility that will not be removed before demolition.

(7) Location and street address (including building number or name and floor or room number, if appropriate), city, county, and state, of the facility being demolished or renovated.

(8) Scheduled start and completion dates of demolition or renovation.

(9) Description of planned demolition or renovation work to be performed and method(s) to be employed, including demolition or renovation techniques to be used and description of affected facility components.

(10) Description of work practices and engineering controls to be used to comply with the requirements of this subpart, including asbestos removal and waste-handling emission control procedures.

(11) Name and location of the waste disposal site where the asbestos-containing waste material will be deposited.

(12) A certification that at least one person trained as required by paragraph (c)(8) of this section will supervise the stripping and removal described by this notification.

(13) Description of procedures to be followed in the event that unexpected RACM is found or Category II nonfriable ACM becomes crumbled, pulverized, or reduced to powder.

(14) Name, address, and telephone number of the waste transporter.

SD-09, Reports

Monitoring Results; [_____].

Fiber counting shall be completed and results reviewed by the Industrial Hygienist within 16 hours. The Industrial Hygienist shall notify the Contractor and the Contracting Officer immediately of any exposures to fibers in excess of the acceptable limits. Submit monitoring results to the Contracting Officer within 3 working days, signed by the testing laboratory employee performing air monitoring, the employee that tested the sample, and the Industrial Hygienist.

Local Exhaust System; [_____].

****

NOTE: When an enclosed regulated area is not required, delete the requirements for the local exhaust system and pressure differential recording.

****

Local exhaust systems must be installed and operated in accordance with ANSI Z9.2-79. The local exhaust system shall be operated continuously, 24 hours a day, until the enclosure of the regulated area is removed. Pressure differential recordings for each workday shall be reviewed by the Industrial Hygienist and submitted to the Contracting Officer within 24 hours from the end of each workday. The Contractor shall notify the Contracting Officer immediately of any variance in the pressure differential which could cause exposure of adjacent unsealed areas to asbestos fiber concentrations in excess of the Action Level.

Job Progress Report; [_____].

During abatement activities, the Industrial Hygienist shall submit a weekly job progress report to the Contracting Officer detailing abatement activities. Include review of progress with respect to Asbestos Plan, milestones and schedules, major problems and actions taken, injury reports, equipment breakdown and a compilation of the week's bulk material and air sampling results conducted by the Contractor's Industrial Hygienist or air sampling professional. Submission of individual monitoring results will be as dictated by SD-09, Reports. The progress report shall be signed by the Contractor, asbestos abatement subcontractor and the Industrial Hygienist.

SD-13 Certificates

Local exhaust and HEPA vacuum filters; [_____].

Respirators; [_____].

SD-18, Records

Landfill Delivery Records; [_____].

****

NOTE: The EPA has delegated the responsibility of

approving landfills for the disposal of asbestos to most states. Verify with the state in which the project is located whether the state or EPA has jurisdiction.

****

Submit written evidence that the landfill for disposal is approved for asbestos disposal by the [EPA] [state] and local regulatory agencies. In accordance with Paragraph 3.6.2.15.e., submit copies of all waste shipment records and resulting correspondence.

1.5 TITLE TO MATERIALS

Materials resulting from demolition work, except as specified otherwise, shall become the responsibility of the Contractor and shall be disposed of as specified herein.

1.6 PROTECTION OF EXISTING WORK TO REMAIN

Perform demolition work without damage or contamination of adjacent work. Where such work is damaged or contaminated, restore work to the original condition.

1.7 SEQUENCE OF WORK

No other work shall be performed in the asbestos regulated area prior to completion and certification of the asbestos abatement work.

1.8 PERMISSIBLE EXPOSURE LIMITS (PELS)

a. Time-weighted average limit (TWA). Ensure that no employee is exposed to an airborne concentration of asbestos in excess of 0.1 fiber per cubic centimeter of air as an eight (8) hour time-weighted average (TWA).

b. Excursion limit. Ensure that no employee is exposed to an airborne concentration of asbestos in excess of 1.0 fiber per cubic centimeter of air (1 f/cc) as averaged over a sampling period of thirty (30) minutes.

1.9 MEDICAL SURVEILLANCE 29 CFR 1926.1101(m)

1.9.1 Medical examinations

Institute a medical surveillance program for all employees who for a combined total of 30 or more days per year are engaged in Class I, II and III work or are exposed at or above the permissible exposure limit or excursion limit, and for employees who wear negative pressure respirators. The content of the examination shall be consistent with 29 CFR 1926.1101 (m). This examination is not required if adequate records show the employee has been examined as required by 29 CFR 1926.1101 (m) within the past year. The same medical examination shall be given on an annual basis to employees engaged in an occupation involving asbestos fibers and within 30 calendars days before or after the termination of employment in such

occupation.

1.9.2 Medical Records

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NOTE: OSHA 29 CFR 1926.1101 required that medical records be retained at least 30 years. Some states require longer retention periods, the maximum being 40 years. Check with the state in which the project is located for the required retention time.

****

Maintain complete and accurate records as required by 29 CFR 1926.1101(n) employees' medical examinations for a period of at least 30 years after termination of employment and make records of the required medical examinations available for inspection and copying to: The Assistant Secretary of Labor for Occupational Safety and Health, The Director of the National Institute for Occupational Safety and Health (NIOSH), authorized representatives of either, and an employee's physician upon the request of the employee or former employee.

1.10 TRAINING

Each employee must have received an equivalent level of training within 3 months prior to assignment to asbestos work or shall be instructed for a minimum of 8 hours by the Industrial Hygienist with regard to the methods of recognizing asbestos; the health effects associated with asbestos; the relationship between smoking and asbestos in producing lung cancer; its purposes, proper use, fitting instructions, and limitations of respirators; the nature of operations that could result in exposure to asbestos, the importance of necessary protective controls to minimize exposure and any necessary instructions in the use of these controls and procedures; the appropriate work practices for performing the asbestos removal job; medical surveillance program requirements; and a review of 29 CFR 1926.58 safety and health precautions and the use and requirements for protective clothing and equipment including respirators. Fully cover engineering and other hazard control techniques and procedures. Maintain complete and accurate records of training for each employee. Records shall be maintained for one year beyond the last date of employment.

1.11 Accreditation of Asbestos Removal Personnel

****

NOTE: Include this paragraph for projects in the State of Indiana

****

Persons who inspect, design, supervise, implement (workers), and manage disposal of asbestos containing removal projects in Indiana must be "accredited" by the Commissioner of the Indiana Air Pollution Control Board.

a. In order to qualify for initial accreditation as an asbestos project supervisor, a person shall meet the following requirements:

(1) Have a minimum of six (6) months experience as an asbestos

project supervisor or as an asbestos worker.

(2) Have attend an approved training course for asbestos project supervision and received a passing score on the written examination for such course during the twelve (12) months prior to submitting an application.

b. In order to qualify for initial accreditation as an asbestos worker, a person shall have attended an approved training course for asbestos workers or an approved training course for asbestos project supervisors and received a passing score on the written examination for such course during the twelve(12) months prior to submitting an application.

1.12 PERMITS

****
NOTE: The EPA has delegated the responsibility of permitting requirements to most states. Verify with the state in which the project is located whether the state or EPA has jurisdiction.
****

Obtain necessary permits in conjunction with this project for the transportation and disposition of asbestos containing materials, and provide timely notification of such actions as may be required by Federal, State, regional, and local authorities. Refer, also, to SD-18, Records (Landfill Delivery Records) and Paragraph 3.6.2.15 for additional requirements.

1.13 SAFETY AND HEALTH COMPLIANCE

In addition to detailed requirements of this specifications, comply with laws, ordinances, rules, and regulations of Federal, State, regional, and local authorities regarding handling, storing, transporting, and disposing of asbestos waste materials. Comply with the applicable requirements of the current issue of 29 CFR 1926.1101 and 40 CFR 61, Subpart A and 40 CFR 61, Subpart M. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting work. Where specification requirements and referenced documents vary, the most stringent requirement shall apply.

PART 2 PRODUCTS

2.1 EQUIPMENT AND MATERIAL USED IN REMOVAL OPERATIONS

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NOTE: Modify the number of sets of protective equipment as required, depending on the size of the asbestos removal project.
****

Furnish the Contracting Officer with [two] [....] complete sets of personal protective equipment, as required herein, for each entry into and

inspection of the regulated area.

2.2 RESPIRATORS

****

NOTE: Air-purifying respirators must be approved for use with dust fumes, and mists having permissible exposure limits less than 0.05 milligrams per cubic meter (i.e., have high efficiency particulate air filters).

****

Select respirators approved by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services, for use in atmospheres containing asbestos fibers. Provide personnel engaged in the removal or demolition of pipes, structures, or equipment covered or insulated with asbestos, or in the removal or demolition of asbestos insulation or covering, with Type C supplied air respirators. During the performance of work when removal or demolition of asbestos materials is not underway and after the TWA and ceiling limit has been established, the Contractor shall provide respirators as required in 29 CFR 1926.1101(h)

RESPIRATOR PROTECTION FOR ASBESTOS FIBERS

Airborne concentration of asbestos or condition of use	Required respirator
Not in excess of 1 f/cc (10XPEL), or otherwise as required independent of exposure	Half-mask air purifying respirator other than a disposable respirator, equipped with high efficiency filters.
Not in excess of 5 f/cc (50XPEL).	Full facepiece air-purifying respirator equipped with high efficiency filters.
Not in excess of 10 f/cc (100XPEL).	Any powered air-purifying respirator equipped with high efficiency filters or any supplied air respirator operated in continuous flow.
Not in excess of 100 f/cc (1,000XPEL), or unknown concentration.	Full facepiece supplied air respirator operated in pressure demand mode, equipped with an auxiliary positive pressure self-contained breathing apparatus.

*A high efficiency filter means a filter that is at least 99.97 percent efficient against mono-dispersed particles of 0.3 micrometers in diameter or larger.

*Air purifying respirators must be equipped with high-efficiency particulate air (HEPA) filters. The HEPA filters are not reusable.

(3) Respirator program. Establish a respirator program as required by ANSI Z88.2-80 and 29 CFR 1910.134.

2.3 SPECIAL CLOTHING

2.3.1 Protective Clothing

Protective clothing shall be coveralls or similar whole-body clothing, headcoverings, gloves, and foot coverings.

2.3.2 Work Clothing

Provide cloth work clothes to wear under the protective coveralls and foot covering.

2.4 HYGIENE FACILITIES

****

NOTE: Decontamination areas, in most cases, should be adjacent and connected to the regulated area to prevent asbestos workers from contaminating adjacent areas when leaving the regulated area.

****

A decontamination area shall consist of an equipment room, shower area, and clean room in series. The equipment room shall be supplied with impermeable, labeled bags and containers for the containment and disposal of contaminated protective equipment. Shower facilities shall be provided which comply with 29 CFR 1910.14(d)(3). The clean change room shall be equipped with a locker or appropriate storage container for each employee's use.

2.5 EYE PROTECTION

Provide goggles for personnel engaged in asbestos operations when the use of a full face respirator is not required.

2.6 WARNING SIGNS AND LABELS

2.6.1 Warning Signs

Warning signs must be of sufficient size to be clearly legible and display the following information:

DANGER

ASBESTOS

CANCER AND LUNG DISEASE HAZARD

AUTHORIZED PERSONNEL ONLY

RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA

2.6.2 Warning Labels

Labels must be of sufficient size to be clearly legible, printed in large, bold letters on a contrasting background, and displaying the following legend:

DANGER

CONTAINS ASBESTOS FIBERS

AVOID CREATING DUST

CANCER AND LUNG DISEASE HAZARD

2.7 LOCAL EXHAUST SYSTEM

Provide a local exhaust system in the enclosed regulated areas. Filters on vacuums and exhaust equipment shall be UL 586-labeled HEPA filters. Local exhaust equipment shall be sufficient to maintain a minimum pressure differential of minus 0.02 inches of water column relative to adjacent, unsealed areas. The local exhaust system must be equipped with a manometer-type negative pressure differential monitor with minor scale division of 0.02 inch of water and accuracy within plus or minus 1.0 percent. The manometer must be calibrated daily as recommended by the manufacturer. Provide manually recorded manometer readings of the pressure differential between the enclosed regulated area and adjacent unsealed areas at the beginning of each workday and every 2 working hours thereafter. The local exhaust system shall be operated continuously, 24 hours per day, until the regulated area enclosure is removed. Replace filters as required to maintain the efficiency of the system. The building heating, ventilating, and air-conditioning (HVAC) system shall not be used as the local exhaust system for the enclosed regulated area.

2.8 TOOLS AND MISCELLANEOUS EQUIPMENT

2.8.1 Airless Sprayer

An airless sprayer, suitable for application of sealing material, shall be used.

2.8.2 Scaffolding

Scaffolding, as required to accomplish the specified work, shall meet all applicable safety regulations.

2.8.3 Transportation Equipment

Transportation equipment, as required, shall be suitable for loading, temporary storage, transporting, and unloading of contaminated waste without exposure to persons or property.

2.8.4 Vacuum Equipment

All vacuum equipment utilized in the work area shall utilize HEPA filtration systems.

2.8.5 Water Sprayer

The water sprayer shall be an airless or other low pressure sprayer for amended water application.

2.8.6 Other Tools and Equipment

The Contractor shall provide other suitable tools for the stripping, removal, encapsulation and disposal activities including but not limited to: knives, stiff nylon brushes, sponges, rounded edge shovels, brooms, and carts.

2.9 MATERIALS

2.9.1 Lockdown Sealant

The sealing agent shall be penetrating sealants and shall meet the following criteria:

a. They shall withstand most impact or abrasion and protect the surface.

b. Sealants selected for use by the Contractor shall be one of those demonstrating probable effective performance under the tests conducted by an independent testing laboratory and are approved by the Contracting Officer.

c. They shall have high flame retardant characteristics, and a low toxic fume and smoke emission rating.

d. They shall not be noxious or toxic to application workers, or subsequent workers in the area.

e. They shall have some permeability to water vapor to prevent condensation accumulation, and resist solution by common cleaning agents. They shall be water insolvable when cured.

f. They shall be acceptable weathering and aging characteristics.

g. They shall be acceptable by architectural standards.

h. They shall be compatible with all insulating material likely to be applied to the stripped surfaces.

i. They shall be demonstrably capable of adhering to the surfaces of the substrate.

j. They must contain a light blue or red paint tint. (Food coloring is not acceptable.)

PART 3 EXECUTION

3.1 GENERAL

3.1.1 Respirator Program.

Establish a respirator program as required by ANSI Z88.2 and 20 CFR 1910.135.

3.1.2 Protective Clothing

Provide and require the use of protective clothing for any employee exposed to airborne concentrations of asbestos that exceed the TWA and/or excursion limit, or for which a required negative exposure assessment is not produced, and for any employee performing Class I operations which involve the removal of over 25 linear or 10 square feet of TSI or surfacing ACM and PACM.

3.1.3 Hygiene Facilities

For employees performing Class I work involving over 25 linear or 10 square feet of TSI or surfacing ACM and PACM, establish a decontamination area that consists of an equipment room, shower area, and clean room in series. Ensure that employees enter and exit the regulated area through the decontamination area. Where it is demonstrated that it is not feasible to locate the shower between the equipment room and the clean room, or where work is performed outdoors, ensure that employees remove asbestos contamination from their worksuits in the equipment room using a HEPA vacuum before proceeding to a shower.

For employees performing Class I work involving less than 25 linear or 10 square feet of TSI or surfacing ACM and PACM, and for Class II and Class III work where exposures exceed a PEL, establish a equipment room or area that is adjacent to the regulated area which is covered by a impermeable drop cloth on the floor or horizontal working surface. The area must be of sufficient size as to accommodate cleaning of equipment and removing personal protective equipment. Ensure that employees enter and exit the regulated area through the equipment room or area.

3.1.4 Warning Signs and Labels

Provide warning signs at approaches to regulated areas containing airborne asbestos fibers. Locate signs at such a distance that personnel may read the sign and take the necessary protective steps required before entering the area. Provide labels and affix to asbestos materials, scrap, waste,

debris, and other products contaminated with asbestos.

3.1.5 Accessibility of Work Areas

The Government will rearrange areas to the extent of providing a reasonable, direct, and unobstructed path to the work sites. During asbestos removal, the Contractor shall confine his equipment and employee pattern to these designated areas. Where the building is still occupied during the removal operations, interference with the functional operation of the building occupants outside these areas will not be permitted. Where conflicts arise due to Contractor's operations, the decision of the Contracting Officer or his authorized representative shall be final.

3.1.6 Preparation for Removal

3.1.6.1 Movable Furnishings

****

NOTE: Verify with the activity whether the Government will remove furniture and equipment before the Contractor begins work. If furniture and equipment will be removed by the Government, use first paragraph; if not to be removed by Government, use second paragraph. Use the third paragraph only when existing furnishings have been contaminated with asbestos fibers and the Contractor will be required to clean these items.

****

Movable furnishings, equipment and fixtures in the work area will be pre-cleaned and removed from the area of work by the Government before asbestos work begins.

OR

Furnishings, equipment and fixtures will remain in the building. Cover furnishings with 6-mil plastic sheet, or remove from the work area and store in a location in the building designated by the Contracting Officer which is not subject to contamination with asbestos fibers. The items shall not be returned to the work area by the [Contractor] [Government] until final room cleanup has been completed and visual inspection and final clearance air monitoring have successfully documented such.

OR

If [furniture,] [books,] [equipment,] [carpeting,] [draperies,] [venetian blinds,] and [.....] in the regulated areas [is] [area] contaminated with asbestos fibers, pre-clean using wet cleaning or with HEPA filter equipped vacuuming device methods. [Draperies and other items which may not be susceptible to on-site wet cleaning methods shall be laundered in accordance with 29 CFR 1926.1101\]

3.1.6.2 Pre-Cleaning

All wall and floor surface areas, other than those from which surface areas, other than those from which asbestos is to be removed, and all non-movable asbestos is to be removed, and all non-movable furnishings, equipment, and fixtures remaining in the work area shall be pre-cleaned with a HEPA filter equipped vacuuming device or wet cleaning methods prior to sealing with plastic sheeting. Do not use any methods which would raise dust such as dry sweeping or vacuuming with equipment not equipped with HEPA filters. After pre-cleaning, enclose fixed objects in 6-mil polyethylene sheeting, label, and seal securely with tape. Objects which must remain in the work area and that require special ventilation or enclosure requirements shall be suitably protected as approved by the Contracting Officer. Items in the work area which may require access by User during abatement shall be designated during the pre-abatement walkthrough and enclosures constructed with access flops sealed with waterproof tape.

3.1.7 Regulated Areas

All Class I, II, and III asbestos work shall be conducted within regulated areas. The regulated area shall be demarcated in any manner that minimizes the number of persons within the area and protects persons outside the area from exposure to airborne concentrations of asbestos. Where critical barriers or negative pressure enclosures are used, demarcate the regulated area. Signs shall be provided and displayed pursuant to 29 CFR 1026.1101(k)(6). Access to regulated areas shall be limited to authorized persons. All persons entering a regulated area where employees are required to wear respirators, shall be supplied with a respirator. All asbestos work performed within regulated areas shall be supervised by a competent person.

3.1.7.1 Enclosed (Critical Barrier) Regulated Area Requirements

NOTE: When an enclosed regulated area is impractical, such as for asbestos removal exterior to buildings or nonfriable asbestos removal interior to buildings, use paragraph 3.1.4.2 and delete paragraph 3.1.4.1. If the project includes areas which can be enclosed and areas which cannot be enclosed, retain both paragraphs and identify enclosed and nonenclosed areas.

Seal openings in areas where the release of airborne asbestos fibers is expected. Establish a regulated area with the use of curtains, portable partitions, or other enclosures in order to prevent the escape of asbestos fibers from the contaminated area. The established regulated area shall be provided with protective covering of walls and ceilings with a continuous

membrane of two layers of minimum 6-mil plastic sheet sealed with tape to prevent water or other damage and two layers of 6-mil plastic sheet over floors extending a minimum of 24 inches up walls. All penetrations of the floor, walls, and ceiling shall be sealed with 6-mil polyethylene plastic and duct tape. Seal joints using spray adhesive and duct tape. Openings will be allowed in enclosures of regulated areas for the supply and exhaust of air for the local exhaust system.

3.1.7.2 Non-Enclosed Regulated Area Requirements

The construction of an enclosed regulated area is impractical for the removal of .... located .... Provide a [20-foot] [....] roped off perimeter around the area where asbestos handling procedures are performed and maintain other requirements for regulated areas. Also, where an enclosure is not provided, conduct personal and area monitoring of airborne fibers during the work shift at the designated limits [downwind] of the asbestos work area at not less than once every 4 hours. If the concentration of airborne asbestos fibers monitored at the designated limits at any time exceeds the lesser of two times the background or the action level, evacuate personnel in adjacent areas. If adjacent areas are contaminated, clean the contaminated areas, monitor, and visually inspect the area as specified herein.

3.2 ASBESTOS ABATEMENT PROCEDURES

****

NOTE: This section covers procedures to protect workers and adjacent personnel during the abatement, collection, storage, loading, transportation and off loading of ACM and PACM. Disposal requirement are covered in Paragraph 3.3.

****

3.2.1 Initial Exposure Assessment

Ensure that a "competent person" conducts an exposure assessment immediately before or at the initiation of the operation to ascertain expected exposures during that operation or workplace. The assessment must be completed in time to comply with requirements which are triggered by exposure data or the lack of a "negative exposure assessment," and to provide information necessary to assure that all control systems planned are appropriate for that operation and will work properly.

An Initial Exposure Assessment shall be conducted in accordance with 29 CFR 1926.1101

For Class I asbestos work, until exposure monitoring is conducted, and is documented that employees on the job will not be exposed in excess of the PELs, or otherwise makes a negative exposure assessment, it is presumed that employees are exposed in excess of the TWA and excursion limit. A negative exposure assessment can only be obtained by demonstrating requirements contained in 29 CFR 1926.1101.

3.2.2 Monitoring Requirements

Perform exposure monitoring as required to determine accurately the airborne concentrations of asbestos to which employees are exposed. Determinations of employee exposure shall be made from breathing zone air samples that are representative of the 8-hour TWA and 30-minute short-term exposures of each employee. Representative 8-hour TWA employee exposure shall be determined on the basis of one or more samples representing full-shift exposure for employees in each work area. Representative 30-minute short-term employee exposures shall be determined on the basis of one or more samples representing 30 minute exposures associated with operations that are most likely to produce exposures above the excursion limit for employees in each work area.

3.2.2.1 Monitoring Prior to Asbestos Work

Provide area monitoring and establish the reference TWA l day prior to the masking and sealing operations for each asbestos removal site. The reference TWA is determined by taking at least three general area air samples in each asbestos regulated area.

3.2.2.2 Periodic monitoring

Conduct daily monitoring that is representative of the exposure of each employee who is assigned to work within a regulated area who is performing Class I or II work unless a negative exposure assessment for the entire operation has been made. Conduct periodic monitoring of all work where exposures are expected to exceed a PEL at intervals sufficient to document the validity of the exposure prediction. When all employees required to be monitored daily are equipped with supplied-air respirators operated in the positive-pressure mode, daily monitoring is not required. However, employees performing Class I work using a control method which is not listed in Class I Requirements paragraph, shall continue to be monitored daily even if they are equipped with supplied-air respirators.

3.2.2.3 Monitoring Adjacent Areas Prior to Asbestos Work

Provide area monitoring and establish the reference TWA inside the building outside the enclosed regulated area l day prior to beginning asbestos work.

3.2.2.4 Termination of Monitoring

If the periodic monitoring reveals that employee exposures, as indicated by statistically reliable measurement, are below the PEL and excursion limit, monitoring may be discontinued for those employee whose exposures are represented by such monitoring. Institute additional monitoring whenever there has been a change in process, control equipment, personnel or work practices that may result in new or additional exposures above the PEL and/or excursion limit.

3.2.3 Respiratory Protection

Respirators shall be used during all Class I work, during all Class II work where the ACM is not removed in a substantially intact state, during all Class II and III work which is not performed using wet methods, during all Class II and III work where a negative exposure assessment is not produced, and during all Class III jobs where TSI or surfacing ACM or PACM is being disturbed. Provide the appropriate respirator as specified in paragraph 2.2.

3.2.4 Controls and Work Practices

The following controls and work practices shall be used in all classes of work regardless of levels of exposure:

a. Vacuum cleaners equipped with HEPA filters to collect all debris and dust containing ACM or PACM;

b. Wet methods, or wetting agents, to control employee exposures during asbestos shandling, mixing, removal, cutting, application, and cleanup, except where demonstrated that the use of wet methods are infeasible;

c. Prompt clean-up and disposal of wastes and debris contaminated with asbestos in leak-tight container;

d. Local exhaust ventilation equipped with HEPA filter dust collection systems;

e. Enclosure or isolation of processes producing asbestos dust;

f. Ventilation of the regulated area to move contaminated air away from the breathing zone and toward a filtration or collection device equipped with a HEPA filter.

The following work practices and controls shall not be used for work related to asbestos or the work which disturbs ACM or PACM, regardless of measured levels of asbestos exposure or results of the initial exposure assessments:

a. High-speed abrasive disc saws that are not equipped with point of cut ventilator or enclosures with HEPA filters exhaust air;

b. Compressed air used to remove asbestos, or ACM, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud created by the compressed air;

c. Dry sweeping, shoveling or other dry clean-up and debris containing ACM and PACM;

d. Employee rotation as a means of reducing employee exposure to asbestos.

3.2.5 Class I Abatement Requirements

In addition to all provisions required in control and work methods above, the following controls and work practices shall be used for all Class I work.

a. Installation and operation of the control systems, shall be supervised by a competent person.

b. Work involving the removal of more than 25 linear or 10 square feet of thermal system insulation or surfacing material; for all other Class I jobs, where a negative exposure assessment, or where employees are working in areas adjacent to the regulated area, while the Class I work is being performed, use one of the following methods to ensure that airborne asbestos does not migrate from the regulated areas:

(1) Critical barriers shall be placed over all openings to the regulated area;

(2) Use another barrier or isolation method which prevents the migration of airborne asbestos from the regulated area, as verified by perimeter area surveillance during each work shift at each boundary of the regulated area, showing no visible asbestos dust; and perimeter area monitoring showing that clearance levels contained in 40 CFR Part 763, Subpt. 3, or that perimeter area levels are no more than background levels representing the same area before the asbestos work began.

c. HVAC systems shall be isolated in the regulated area by sealing with a double layer of 6 mil plastic or the equivalent;

d. Impermeable dropcloths shall be placed on surfaces beneath all removal activity;

e. All objects within the regulated area shall be covered with impermeable dropcloths or plastic sheeting which is secured by duct tape or an equivalent.

f. Where a negative exposure assessment cannot be produced, or where exposure monitoring shows that a PEL is exceeded, ventilate the regulated area to move contaminated air away from the breathing zone of employees toward a HEPA filtration or collection device.

3.2.5.1 Negative Pressure Enclosure (NPE) Systems

A Negative Pressure Enclosure (NPE) System shall be used where the configuration of the work area does not make the erection of the enclosure infeasible. Specifications and work practices shall be as required in 29 CFR 1926.1101(g)(5).

3.2.5.2 Glovebag Systems

Glovebag systems shall be used to remove PACM and/or ACM from straight runs of piping with the following specifications and work practices. Each glovebag shall be installed so that it completely covers the circumference of pipe or other structure where the work is to be done. Shall be smoke-tested for leaks and any leaks sealed prior to use and may be used only once and may not be moved. Shall not be used on surfaces whose temperature exceeds 150 degrees. Prior to disposal, they shall be collapsed by removing air within them using a HEPA vacuum. Before beginning the operation, loose and friable material adjacent to the glovebag/box operation shall be wrapped and sealed in two layers of six mil plastic or otherwise rendered intact.

Where system uses attached waste bag, such bag shall be connected to collection bag using hose or other material which shall withstand pressure of ACM waste and water without losing its integrity. Sliding valve or other device shall separate waste bag from hose to ensure no exposure when waste bag is disconnected.

At least two persons shall be required to perform Class I glovebag removals.

3.2.5.3 Negative Pressure Glove Bag Systems

A Negative Pressure Glove Bag System shall be used to remove ACM or PACM from piping. Attach HEPA vacuum systems or other devices to bag to prevent collapse during removal and run continually during the operation. Where a separate waste bag is used along with a collection bag and discarded after one use, the collection bag may be reused if rinsed clean with amended water before reuse.

3.2.5.4 Negative Pressure Glove Box Systems

A Negative Pressure Glove Box System shall be used to remove ACM or PACM from pipe runs. Box shall be constructed with rigid sides and made from metal or other material which can withstand the weight of the ACM and PACM and water used during removal. A negative pressure generator shall be used to create negative pressure in system. An air filtration unit shall be attached to the box. The box shall be fitted with gloved apertures. An aperture at the base of the box shall serve as a bagging outlet for waste ACM and water. A back-up generator shall be present on site. The box shall be smoke tested prior to each use. At least two persons shall perform the removal.

3.2.5.5 Water Spray Process System

A Water spray Process System shall be used for removal of ACM and PACM from cold line piping if, employees carrying out such process have completed a 40-hour separate training course in its use, in addition to training required for employees performing Class I work. Piping shall be surrounded on 3 sides by rigid framing. A 360 degree water spray, delivered through nozzles supplied by a high pressure separate water line, shall be formed

around the piping. The system shall be operated by at least three persons, one of whom shall not perform removal, but shall check equipment, and ensure proper operation of the system. After removal, the ACM and PACM shall be bagged while still inside the water barrier.

3.2.5.6 Intact Asbestos Insulated Pipe Removal

****

NOTE: Retain paragraph as an optional procedure where both pipe and pipe insulation are to be removed.

****

When both piping and insulation are to be removed tintact, wet he insulation, then, using glovebag technique, remove 10-inch to 12-inch section of the pipe insulation and encapsulate exposed edges of the asbestos insulation to remain, remove the glovebag, cut and remove the intact insulated pipe. Long components removed intact may be wrapped in 2 layers or 6-mil polyethylene sheeting secured with tape at the ends, prior to or after cutting the pipe, for transport to the landfill. Intact insulated pipe shall be removed in manageable sections.

3.2.5.7 Exposed Pipe Insulation Edges

****

NOTE: This paragraph shall be included when new insulated piping is provided in a renovation project in which some existing asbestos insulation will remain in the building. This paragraph is not intended for new buildings or existing buildings without SECTION: PAINTING. Also, a reference to the marking requirements of this section should be noted in the section where the insulation is specified.

****

Encapsulate exposed edges of asbestos insulation to remain. Wet and cut the rough ends true and square with sharp tools and encapsulate the edges with a l/4-inch thick layer of insulating cement troweled to a smooth, hard finish. When cement is dry, lag the end with a layer of fiberglass cloth and thermal insulation adhesive, overlapping the existing ends by 4 inches. When insulating cement and cloth are an impractical method of sealing raw edges of asbestos, take appropriate steps to seal the raw edges as approved by the Contracting Officer. Remove existing asbestos insulation for new piping connections during the asbestos handling and disposal procedures as specified herein.

3.2.5.8 Asbestos Contaminated Soil

The area of contaminated soil is to be removed of by the following procedures:

a. Before the soil removal commences, mark the wall in the area(s).

b. Using small shovels, the soil shall be removed to a minimum depth of 3 inches.

c. Verification of the depth will be made by measurement from the floor surface to the bottom of the wall mark.

d. As an option to the above procedure, the Contractor may encapsulate the soil area with American Coating's "Earth Coat" process or equivalent approved soil encapsulant.

3.2.6 Class II Abatement Requirements

Class II asbestos work shall be performed by complying with work practices and controls designated for each type of asbestos work to be performed set out in 29 CFR1926.1101((g)(7). Class II work also may be performed using a method allowed for Class I work, except that glove bags and glove boxes are allowed if they fully enclose the Class II material to be removed.

3.2.6.1 Vinyl and Asphalt Flooring Materials

For removing vinyl and asphalt flooring materials which contain ACM or for buildings constructed no later than 1980:

a. Flooring or its backing shall not be sanded.

b. Vacuums equipped with HEPA filter, disposable dust bag, and metal floor tool (no brush) shall be used to clean floors.

c. Resilient sheeting shall be removed by cutting with wetting of the snippoint and wetting during delamination. Rip-up of resilient sheet floor material is prohibited.

d. All scraping of residual adhesive and/or backing shall be performed using wet methods.

e. Dry sweeping is prohibited.

f. Mechanical chipping is prohibited unless performed in a negative pressure enclosure which meets the requirement of this section.

g. Tiles shall be removed intact, unless it is demonstrated that intact removal is not possible.

h. When tiles are heated and can be removed intact, wetting may be omitted.

i. Resilient flooring material including associated mastic and backing shall be assumed to be asbestos-containing unless an industrial hygienist determines that it is asbestos-free using recognized analytical techniques.

3.2.6.2 Roofing Material Removal

a. Roofing material shall be removed in an intact state to the extent feasible.

b. Wet methods shall be used where feasible.

c. Cutting machines shall be continuously misted during use, unless a competent person determines that misting substantially decreases worker safety.

d. All loose dust left by the sawing operation must be HEPA vacuumed immediately.

e. Unwrapped or unbagged roofing material shall be immediately lowered to the ground via covered dust-tight chute, crane or hoist, or placed in an impermeable waste bag or wrapped in plastic sheeting and lowered to ground no later than the end of the work shift.

f. Upon being lowered, unwrapped material shall be transferred to a closed receptacle in such manner so as to preclude the dispersion of dust.

g. Roof level heating and ventilation air intake sources shall be isolated or the ventilation system shall be shut off.

3.2.6.3 Cementitious Asbestos-Containing Siding and Shingles or Transite Panels

a. Cutting, abrading or breaking siding, shingles, or transite panels, shall be prohibited unless the employer can demonstrate that methods less likely to result in asbestos fiber release cannot be used.

b. Each panel or shingle shall be sprayed with amended water prior to removal.

c. Unwrapped or unbagged panels or shingles shall be immediately lowered to the ground via covered dust-tight chute, crane or hoist, or placed in an impervious waste bag or wrapped in plastic sheeting and lowered to the ground no later than the end of the work shift.

d. Nails shall be cut with flat, sharp instruments.

3.2.6.4 Gaskets Containing ACM

a. If visibly deteriorated and unlikely to be removed intact, removal shall be undertaken within a glovebag.

b. The gasket shall be thoroughly wetted with amended water prior to its removal.

c. The wet gasket shall be immediately placed in a disposal container.

d. Any scraping to remove residue must be performed wet.

3.2.6.5 Transite Board Removal Method

The wallboard material shall be sprayed with a lockdown sealant in order to reduce the potential of fiber release and the fasteners and board shall be removed. After removal, the wallboard shall be wrapped in two layers of 6-mil plastic and sealed with tape. If the size of the wallboard permits, the wrapped material shall be placed in drums for disposal. The wallboard shall not be sawed, crushed or abraded at any time during removal. Clean up shall consist of HEPA vacuuming any accumulated asbestos debris and spraying of lockdown sealant on the framing to which the wallboard material was fastened.

3.2.6.6 Trowelled-On Wall Plaster Removal Method

The material is sprayed with amended water and saturated sufficiently to wet it to the substrate without causing excess dripping. Remove the saturated material in small sections. The asbestos material is sprayed repeatedly during the work process to maintain wet conditions and to minimize asbestos fiber dispersion. As it is removed, the material is placed in 6-mil plastic bags and appropriate containers for disposal.

3.2.6.7 Any other Class II Removal of ACM

a. The material shall be thoroughly wetted with amended water prior and during its removal.

b. The material shall be removed in an intact state unless the employer demonstrates that intact removal is not possible.

c. Cutting, abrading, or breaking the material shall be prohibited unless the employer can demonstrate that methods less likely to result in asbestos fiber release are not feasible.

d. ACM removed shall be immediately bagged or wrapped, or kept wetted until. transferred to a closed receptacle, no later than the end of the work shift.

3.2.7 Class III Asbestos Work

Class III work shall be performed using wet methods. To the extent feasible, work shall be performed using local exhaust ventilation. Where disturbance involves drilling, cutting, etc., use impermeable dropcloths, and shall isolate the operation using mini-enclosures or glovebag systems. Work which involves the disturbance of TSI require respirators.

3.2.8 Identification of Asbestos-Free Insulation

****

NOTE: This paragraph shall be included when new insulated piping is provided in a renovation project in which some existing asbestos insulation will remain in the building. This paragraph is not intended for new buildings or existing buildings without asbestos pipe insulation. This paragraph shall be coordinated with SECTION: PAINTING. Also, a reference to the marking requirements of this section should be noted in the section where the insulation is specified.

****

Apply "ASBESTOS-FREE" markings to the exterior jackets of nonasbestos-insulated piping installed herein. Letter size shall be in accordance with MIL-STD-101B. Apply marking at maximum of 20-foot intervals. Indicate the limits of "ASBESTOS-FREE" insulation with a l-inch wide band with attached arrow pointing in the direction of the label "ASBESTOS-FREE." Paint markings in orange, No. 12246 of Fed. Std. 595A and as specified in SECTION: PAINTING.

3.3 COLLECTION

****

NOTE: This paragraph is generally used where non-friable ACM such as roofing and siding is to be removed from building exteriors. This paragraph may also be edited for interior use, such as removal of floor tile. Non-friable ACM has been classified by the U.S. Environmental Protection Agency (EPA) as either Category I or Category II. See paragraphs 1.3.11 and 1.3.12 for definitions. To determine if these materials need to be treated as Regulated Asbestos Containing Materials (RACM), see the definition in paragraph 1.3.43. When it has been determined that the project contains nonfriable ACM which must be treated as RACM, include paragraph 3.3.2. When all known non-friable ACM is non-RACM, paragraph 3.3.2 should be deleted.

****

3.3.1 Nonfriable Non-Regulated Asbestos Containing Material (Non-RACM)

The following types of non-friable ACM found in this project are considered non-RACM and do not require special collection action:

[Vinyl Asbestos Flooring}
[Asphalt Roofing]
[Transit Board]
[ ]

The notification requirements of Para. 1.4.2 are still applicable, however, to Non-RACM.

3.3.2 Regulated Asbestos Containing Material (RACM)

Asbestos containing material shall be removed in manageable sections. Removed material should be containerized before moving to a new location for continuance of work. Surrounding areas within the 20-foot perimeter shall be periodically sprayed and maintained in a wet condition until visible material is cleaned up.

Maintain surfaces of the regulated area free of accumulations of asbestos fibers. Restrict the spread of dust and debris; keep waste from being distributed over the general area. Do not dry sweep or blow down the space with compressed air. Clean all surfaces in the work area and other contaminated areas with water [and/or HEPA vacuum equipment. After cleaning the work area, allow 24 hours for settlement of dust and wet clean or clean with HEPA vacuum equipment all surfaces in the work area]. When asbestos removal, disposal, and cleanup are complete, the Contractor shall certify, in writing, that the concentration of airborne fibers in the regulated area is less than 0.0l fibers (longer than 5 micrometers) per cubic centimeters of air. Do not remove the regulated area enclosure [or roped-off perimeter] and caution signs prior to the Contracting Officer's receipt of the certification. After final cleanup, remove filters on the building HVAC system and provide new filters. Dispose of filters as asbestos-contaminated waste. Reestablish HVAC, mechanical, and electrical systems in proper working order. The Contracting Officer will visually inspect the affected surfaces for residual asbestos material and accumulated dust; the Contractor shall reclean areas showing dust or residual asbestos materials. If recleaning is required, monitor the airborne fiber concentration after recleaning. Notify the Contracting Officer before unrestricted entry is permitted. The Government shall have the option to perform independent monitoring to certify the areas are safe before entry is permitted.

Collect asbestos waste, scrap, debris, bags, containers, equipment, and asbestos-contaminated clothing which may produce airborne concentrations of asbestos fibers; place in sealed impermeable bags imprinted with a caution label (Para. 2.6.2) and shall also be labeled with the name of the Contractor and the location at which the waste was generated. [The sealed bags shall then be placed in a second sealed impermeable bag also imprinted with the warning label.] [Place bags in disposable asbestos-waste drums. Steel drums are not allowed.]

Label wrapped materials that will not fit in drums in the same manner as described in para. 1. above.

3.3.2.1 Removing Material Intact

Asbestos containing material removed from the building shall not be dropped or thrown to the ground. Material should be removed as intact sections whenever possible and carefully lowered to the ground. Materials between 15 and 50 feet above the ground may be containerized at elevated levels or placed into inclined chutes or scaffolding for subsequent collection and containerization. Asbestos materials in open containers shall be kept wet at all times.

3.3.2.2 Containers

Containers (drums or 6-mil polyethylene bags) shall be sealed when full. Wet material will be heavy and double bagging of waste material is usually necessary. A determination of need for single or double bags must be made early in the abatement process and approved by the Contracting Officer. Bags, if used, shall not be overfilled. They should be securely sealed to prevent accidental opening and leakage by tying tops of bags in an overhand knot or by taping in gooseneck fashion. Do not seal bags with wire or cord. Bags may be placed in drums for staging and transportation to the landfill. Bags shall be decontaminated on exterior surfaces by wet cleaning before being placed in clean drums and sealed with locking ring tops. Where unusual circumstances prohibit use of plastic disposal bags or drums, the Contractor shall submit, in the asbestos plan, an alternate proposal for removal, containerizing, and disposal of the asbestos materials and fibers.

3.3.2.3 Sharp-Edged Components

Asbestos containing or contaminated waste with sharp edged components (e.g. nails, screws, metal lath, tin sheeting) that could otherwise tear polyethylene bags shall be placed into drums for disposal.

3.3.2.4 Asbestos Contaminated Soil

The removed soil shall be placed in 6-mil plastic bags, sealed and then placed in asbestos waste drums for disposal. Do not overfill plastic bags.

3.3.2.5 Wastewater

a. Pre-filtering. Any water produced by the decontamination of either equipment or persons shall be (1) collected, (2) filtered through a system capable of trapping particles 5 microns and larger, specifically designed to remove asbestos fibers, and (3) filtrate disposed into a local sanitary sewer system.

b. Filter System. The filtration system shall contain a series of several filters with progressively smaller pore sizes to avoid rapid clogging of the system by large particles. Disposable filters shall be treated as asbestos waste.

3.4 DISPOSAL OF ACM

3.4.1 Nonfriable Non-Regulated Asbestos Containing Material (Non-RACM)

The following types of non-friable ACM found in this project are considered non-RACM and do not require special disposal action:

[Vinyl Asbestos Flooring]
[Asphalt Roofing]

[Transit Board]
[ ]

The notification requirements of Para. 1.4.2 are still applicable, however, to Non-RACM.

3.4.2 Regulated Asbestos Containing Material (RACM)

****

NOTE: For all projects in Kentucky, double bagging is required. Edit paragraph 1 accordingly. At Ft. Knox, Ky., dispose of ACM in disposable drums or containers at the Frazier Road landfill. Disposal in plastic bags only or in steel drums or at off-site landfills is not allowed at this installation. Drums may not be recycled. Steel dumpsters are not allowed for holding or transporting of asbestos containing waste. Edit paragraphs 1, 6, 7, and 11 to suit requirements at Ft. Knox.

****

1. Once drums, bags and otherwise containerized asbestos containing materials have been removed from the work area, they shall be loaded into an enclosed truck for transportation to the designated landfill. Asbestos waste shall not be allowed to be placed in trucks with non-asbestos waste.

2. The enclosed cargo area of the truck shall be free of debris and lined with 6-mil polyethylene sheeting to prevent contamination from leaking or spilled containers. Floor sheeting shall be installed first and extend up the sidewalls. Wall sheeting shall be overlapped and taped into place so that no materials may escape to the environment.

3. Drums shall be placed on level surfaces in the cargo area and packed tightly together to prevent shifting and tipping. Do not throw containers into the cargo area.

4. Personnel loading asbestos containing waste shall be protected by disposable clothing including head, body and foot protection and at a minimum, half-facepiece, air purifying, dual cartridge respirators equipped with high efficiently particulate air (HEPA) filters.

5. [Large steel dumpsters (roll-off type) may be used for asbestos waste disposal. These should be lined with polyethylene and should have doors, tops or covers that can be closed to prevent vandalism or other disturbance of the containerized asbestos debris and wind dispersion of asbestos fibers. Uncontainerized asbestos materials shall not be placed in these type dumpsters, nor shall they be used for non-asbestos waste. Bags shall be placed, not thrown, into these containers to avoid splitting.]

****

NOTE: The optional wording is applicable to stateside locations. The EPA has delegated the responsibility of approving landfills for the

disposal of asbestos to most states. Verify with the state in which the project is located whether the state or EPA has jurisdiction. Some activities have state- or EPA-approved landfills for the disposal of asbestos on Government property. If so, modify the disposal wording to suit the project location.

****

6. Dispose of waste asbestos material [at an Environmental Protection Agency (EPA)] [at a state] permitted sanitary landfill [off Government property] [....].

7. For temporary storage, store sealed impermeable bags in asbestos waste drums. An area for interim storage of asbestos waste-containing drums will be assigned by the Contracting Officer or by an authorized representative. This area must be secure. No ACM wastes, except those properly labeled and properly containerized and physically located in the assigned holding area shall be allowed to remain at the site overnight.

8. Procedure for hauling and disposal shall comply with 40 CFR 6l, Subpart M, 40 CFR 241, 40 CFR 257, and State, regional and local standards. Vehicles used to transport asbestos-containing waste material must be marked as follows:

Mark vehicles used to transport asbestos-containing waste material during the loading and unloading of the waste so that the signs are visible. The markings must:

(i) Be displayed in such a manner and location that a person can easily read the legend.

(ii) Conform to the requirements for 51 cm x 36 cm (20 in. x 14 in.) upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph; and

(iii) Display the following legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in this paragraph.

Legend

DANGER
ASBESTOS DUST HAZARD
CANCER AND LUNG DISEASE HAZARD
Authorized Personnel Only

Notation
2.5 cm (1 inch) Sans Serif, Gothic or Block
2.5 cm (1 inch) Sans Serif, Gothic or Block
1.9 cm (3/4 inch) Sans Serif, Gothic or Block
14 Point Gothic

Spacing between any two lines must be at least
equal to the height of the upper of the two lines.

9. Upon reaching the landfill, trucks are to approach the dump location as closely as possible for unloading of the asbestos containing waste.

10. Bags, drums and components shall be inspected as they are offloaded at the disposal site. Material in damaged containers shall be repacked in empty drums or bags as necessary. [Uncontaminated drums may be recycled.]

11. Waste containers shall be placed on the ground at the disposal site, not pushed or thrown out of trucks since the weight of wet material could rupture containers.

12. Personnel off-loading containers at the disposal site shall wear protective equipment consisting of disposable head, body and foot protection and, at a minimum, half-facepiece, air-purifying, dual cartridge respirators equipped with high efficiency particulate air (HEPA) filters. Following the removal of all containerized waste, the truck cargo area shall be decontaminated to meet the no visible residue criteria. Polyethylene sheeting shall be removed and discarded along with contaminated cleaning materials and protective clothing, in bags or drums at the disposal site. If landfill personnel have not been provided with personal protective equipment for the compaction operation by the landfill operator, Contractor shall supply protective clothing and respiratory protection for the duration of this operation.

13. Shipment Records

a. Maintain waste shipment records, using a form similar to that shown at the end of this section and include the following information:

(i) The name, address, and telephone number of the waste generator.

(ii) The name and address of the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program.

(iii) The approximate quantity in cubic meters (cubic years).

(iv) The name and telephone number of the disposal site operator.

(v) The name and physical site location of the disposal site.

(vi) The date transported.

(vii) The name, address, and telephone number of the transporter(s).

(viii) A certification that the contents of this consignment are fully and accurately described by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition

for transport by highway according to applicable international and government regulations.

b. Provide a copy of the waste shipment record, described above to the disposal site owners or operators at the same time as the asbestos-containing waste material is delivered to the disposal site.

c. For waste shipments where a copy of the waste shipment record, signed by the owner or operator of the designated disposal site, is not received by the Contractor within 35 days of the date the waste was transported, contact the owner or operator of the designated disposal site to determine the status of the waste shipment. The Contractor shall report in writing to the NESHAP-administering agency if a copy of the waste shipment record, signed by the owner or operator of the designated waste disposal site, is not received by the Contractor within 45 days of the date the waste was transported. Include in the report the following information:

(i) A copy of the waste shipment record for which a confirmation of delivery was not received, and

(ii) A cover letter explaining the efforts taken to locate the asbestos waste shipment and the results of those efforts.

d. Retain a copy of all waste shipment records, including a copy of the waste shipment record signed by the owner or operator of the designated waste disposal site, for at least 2 years.

e. Provide to the Contracting Officer within 3 working days following delivery of asbestos containing waste material (ACWM), copies of all waste shipment records. Also within 3 working days of initiation, provide to the Contracting Officer copies of any correspondence with the NESHAP-administering agency.

Furnish upon request, and make available for inspection by the NESHAP-administering agency, all records under this section.

3.4.3 Wastewater

It is the Contractor's responsibility to comply with any local wastewater systems' regulations or policy regarding the disposal of wastewater from asbestos abatement activities.

3.5 CLEANUP AND FINAL CLEARANCE

3.5.1 Visual Inspection After Cleanup

Prior to the performance of final air monitoring, the Contractor and the Contracting Officer or his representative shall perform a visual inspection for asbestos dust/residue. If residue is found, additional wipedown/vacuuming shall be performed to satisfaction of the Contracting Officer.

3.5.2 Monitoring After Final Cleanup

****

NOTE: Delete this paragraph for projects in State of Michigan.

****

After the removal site has passed the visual inspection, provide area monitoring of fibers (at least 3 samples per removal site) under aggressive conditions and establish the TWA of less than 0.0l fibers (longer than 5 micrometers) per cubic centimeter of air after final cleanup but before removal of the enclosure of the regulated area. Provide area monitoring and establish the TWA 2 days and 5 days after the enclosure of the regulated area is removed. Provide area monitoring and establish the TWA after final cleanup when an enclosure is not required. The fiber counts from the samples shall be less than 0.0l fibers (longer than 5 micrometers) per cubic centimeter of air or be not greater than the reference TWA, whichever is less. Should any of the final samplings indicate a higher value, the Contractor shall take appropriate actions to reclean the area and shall repeat the monitoring.

3.5.2 Clearance Monitoring

****

NOTE: Use this paragraph for projects in the State of Michigan.

****

After the asbestos removal area has passed the visual inspection, perform clearance air monitoring as specified in State of Michigan Public Act 135, Section 222, using aggressive air sampling methods. Aggressive air monitoring shall be performed at all regulated areas involving a negative pressure enclosure involving 10 or more linear feet or 15 or more square feet of friable asbestos materials. Aggressive air monitoring shall be performed as described in 40 CFR 763, Subpart E, Appendix A, Unit III paragraphs B, 7, and d. Sampling operations shall be performed by qualified individuals completely independent of the abatement contractor except as indicated in Section 221 of Public Act 135 as amended. Results of the clearance air sampling shall be submitted to the Michigan Department of Public Health and the Contracting Officer as proof of completion and acceptance.

3.5.3 Sampling

****

NOTE: Delete this paragraph for projects in the State of Michigan.

****

Sampling under aggressive conditions shall include the following

procedures:

a. Before starting the sampling pumps, direct the exhaust from forced air equipment (such as l horsepower leaf blower) against all walls, ceiling, floors, ledges and other surfaces in the room. This should take at least 5 minutes per 1000 sq. ft. of floor.

b. Place a 20-inch fan in the center of the room. (Use one fan per 10,000 cubic feet of room space.) Place the fan on slow speed and point it toward the ceiling.

c. Start the sampling pumps and sample for the required time.

d. Turn off the pump and then the fan(s) when sampling is complete.

3.5.4 Air Clearance Failure

Should clearance sampling results fail to meet the final cleanup requirements, the Contractor shall take appropriate action at no additional cost to the Government, to reclean, resample, and analyze data until final cleanup requirements are met.

3.5.5 Site Inspection

While performing asbestos removal work, the Contractor shall be subject to onsite inspection by the Contracting Officer who may be assisted by safety or health personnel. If the work is in violation of specification requirements, the Contracting Officer will issue a stop work order to be in effect immediately and until the violation is resolved. Standby time and expenses required to resolve the violation shall be at the Contractor's expense.

3.5.6 Sealing Permanent Exposed Surfaces (RACM)

****

NOTE: Sealing of exterior building surfaces is not required.

****

After the asbestos material has been removed and HEPA vacuumed to the greatest extent possible, all permanent asbestos exposed interior surfaces shall be coated with an approved lockdown sealant to permanently bind any remaining fibers in place. Sealant shall be applied by airless sprayers and in accordance with the sealant manufacturers recommendations.

3.5.6 Sealant Tint

The sealant shall have an adequate tint to easily distinguish between sections sealed and sections not sealed.

3.5.7 Reestablishment of the Work Area and Systems

3.5.8 Reestablishment of the Work Area

Reestablishment of the work area shall only occur following the completion of clean-up procedures and after clearance air monitoring has been performed and documented to the satisfaction of the Contracting Officer.

3.5.9 Visual Inspection

The Contractor and Contracting Officer shall visually inspect the work area for any remaining visible residue. Evidence of asbestos materials will necessitate additional cleaning requirements.

3.5.10 Clearance of Work Area

Following satisfactory clearance of the work area, remaining barriers may be removed and disposed of as asbestos contaminated waste.

3.5.11 Remaining Building Demolition Procedures

[Contractor may proceed with remaining building demolition procedures as described in SECTION 02050 DEMOLITION.]

****

ADDITIONAL NOTES

NOTE A: For additional information on the use of all CEGS, see CEGS-01000 CEGS GENERAL NOTES.

NOTE B: This guide specification covers the safety procedures and requirements for the demolition and removal of friable and nonfriable material containing asbestos. Nonfriable materials containing asbestos are considered hazardous during demolition and removal procedures and shall therefore be handled in accordance with the same procedures established herein for friable asbestos.

NOTE C: Corps of Engineers policy is to eliminate the use of materials containing asbestos in cases where asbestos-free materials are available and suitable for the intended use; however, this is not intended to eliminate the use of asbestos materials completely since some items containing asbestos have no suitable substitute. The specifier should strive wherever possible to limit the use of asbestos in this project in accordance with this policy.

NOTE D: Where numbers, symbols, words, phrases, clauses, or sentences in this specification are enclosed in brackets [ ], a choice or modification must be made; delete inapplicable portion(s) carefully. Where blank spaces occur in sentences, insert the appropriate data. Where entire paragraphs are not applicable, they should be deleted completely.

****

--End of Section--

TO ALL SPEC WRITERS:

Remove this sheet and replace it with the "ASBESTOS SURVEY REPORT" if it is available.

MICHIGAN
TENNESSEE

ASBESTOS REMOVAL REPORT FORM

Contractor: _____
Address: _____

City: _____State: _____Zip: _____

Phone: (____)_____

Building Owner or Operator: _____

Address: _____

City: _____ State: _____Zip: _____

Phone: (____)_____

Building Information: _____

Age of Building: _____

Use of Building: _____

Address: _____

City: _____ State: _____ Zip: _____

Amount of Asbestos (ft): _____Abatement Technique: _____

Amount of Asbestos (ft): _____Abatement Technique: _____

Contract Dates: Start: _____ Finish: _____

Disposal Site: _____

Site Name: _____Owner-Operator Name: _____

Address: _____Address: _____

City, State: _____City, State: _____

Phone: (____)_____Phone: (____)_____

MICHIGAN Dept. of Natural Resources
Air Pollution Control Div
P.O. Box 30038
Lansing, Michigan 48909

TENNESSEE Tenn. Air Pollution Control
ATTN: Mr. Bobby Jernigan
Customs House
701 Broadway

(517) 322-1330

Nashville, TN 37247-3101
(615) 741-3931

KENTUCKY
DIVISION OF AIR POLLUTION CONTROL
l8 REILLY ROAD, FORT BOONE PLAZA
FRANKFORT, KENTUCKY 40601

TEN DAY REPORT FORM

This form is to be filled in and filed with both state and regional EPA officials a minimum of ten (10) days before start of the asbestos abatement contract.

Contractor: _____

Address: _____

City: _____State: _____Zip: _____

Phone: (____)_____

Building Owner or Operator: _____

Address: _____

City: _____ State: _____Zip: _____

Phone: (____)_____

Building Information: _____

Age of Building: _____

Use of Building: _____

Address: _____

City: _____ State: _____ Zip: _____

Amount of Asbestos (ft): _____Abatement Technique: _____

Amount of Asbestos (ft): _____Abatement Technique: _____

Contract Dates: Start: _____ Finish: _____

Disposal Site: _____

Site Name: _____Owner-Operator Name: _____

Address: _____Address: _____

City, State: _____City, State: _____

Phone: (____)_____Phone: (____)_____

INDIANA

INDIANA FRIABLE ASBESTOS

DEMOLITION/RENOVATION PROJECT NOTIFICATION

The following information on asbestos demolition/renovation projects is required by Rule 325 IAC 14-2 to be delivered to the Indiana Air Pollution Control Board, 1330 West Michigan Street, P.O. Box 1964, Indianapolis, IN 46206. Questions should be directed to the Air Pollution Control Division, Variance and Tracking Section at (317) 633-0645.

l. Contractor _____

2. Contact _____Phone (____) _____

3. Address_____
Street City State Zip

4. Building Owner/Operator _____

5. Contact _____Phone (____) _____

6. Address _____
Street City State Zip

7. Is Project Demolition or Renovation: (Circle One)

8. Has facility been condemned: Yes_____ No_____

9. If yes, by what agency?_____

10. Location of Project_____
Street City

ll. Description of Facility-Size _____

12. Present use of Facility: _____

13. Prior use of Facility: _____

14. Estimated amount of asbestos to be removed:
Pipes (linear ft.) _____Other Components (sq ft)_____

15. Describe method of estimation, nature of material, and method of removal. (Use separate sheet)

16. What additional steps will be taken to prevent asbestos emission into surrounding areas and outside air? (Use separate sheet)

17. Work is scheduled between the dates of _____ and _____

18. Disposal site _____
Name Address

INDIANA
19. Has approval for disposal been received from Land Pollution Control Division? Yes _____ No _____ In Process _____

20. Date(s) of disposal _____

2l. Signature _____ Date _____

59
State Form 37753
SBH61-244

ILLINOIS

DEMOLITION/RENOVATION NOTICE
Illinois Environmental Protection Agency 220 Churchill Road, Springfield, IL 62706

217/785-1743 DATE: _____

NOTICE OF ASBESTOS REMOVAL

This form is to be completed in full and filed by the Contractor with both State and Federal EPA Officials as early as possible, but in no case less than ten (10) working days, before the start of a demolition/renovation involving the stripping or removal of at least 260 linear feet of asbestos materials on pipes or at least 160 square feet of asbestos materials on ducts, boilers, tanks, reactors, turbines, furnaces, load-supporting members (such as beams and load-supporting walls), or nonload-supporting members (such as ceilings and nonload-suupporting walls).

CONTRACTOR
NAME: _____
Address: _____
City: _____ State: _____ Zip: _____
Phone: (____)_____

Building Owner or Operator
Name: _____
Address: _____
City: _____ State: _____ Zip: _____

Building Information
Size of Building (number of floors, approximate square footage): _____
Age of Building: _____
Immediate Prior Use of Building: _____
Address of Building: _____
City: _____ County: _____ Zip: _____
Nature and Method of Removal: _____

Abatement Information
Description of Asbestos-Containing Material: _____
Approximate Amount of Asbestos Material on Pipes (linear feet; if none, so state): _____
Approximate Amount of Asbestos Material on other Facility Components

(square feet; if none, so state): _____
Abatement Technique (Example: "wetting and sealing in leak-tight containers") : _____
Abatement Dates: Start _____ Finish: _____

Disposal Site
Landfill Name: _____
Address: _____
City: _____State: _____ Zip: _____
Phone: (____)_____
IL 532-1269

OHIO EPA

State of Ohio Environmental Protection Agency

Demolition and Asbestos Renovation Notification

l. Check one only:

/_____/ Planned renovation (5 days prior notice required)
/_____/ Emergency renovation (phone approval followed in writing in 24 hours)
/_____/ Demolition (10 days prior notice if asbestos will be removed)
/_____/ Demolition (20 days prior notice for negative declaration)
/_____/ Emergency Demolition (attache engineer's statement building is in imminent danger of collapse with condemnation order including name, title, authority and phone of issuing government official.
_____

2. Name and Address of Owner: Name and Address of Contractor:

_____Phone: (___)_____Phone: (____)_____

3. Facility Name & Address: (attached map for multiple structures of location

_____County, Ohio (zip) _____

4. Facility Description: Size: _____Square Feet, Age:_____ Years,
The prior use of the facility was_____
The current use of this facility is_____

5. Estimate of Friable Asbestos: _____Linear feet on pipes: _____square feet on other components; _____s.f. of non-friable
Estimation Technique:

6. Asbestos removal starting date: _____ Completion date: _____
Demolition starting date (if applicable): _____
Will removal be conducted on weekends, or on weekdays after 5:00 p.m., and prior to 7:00 a.m.? (circle one) Yes/No. If yes, specify:

7. General method and purpose of demolition or renovation:

8. Procedures to be used to comply with regulations: (check as appropriate _____adequate wetting, _____ amended water, _____keep material wet until collected, _____ carefully lower materials, _____complete cleaning and lockdown, _____ seal materials into leak-tight container, _____ double 6 mil bags, _____sing 6 mil bag and drum, _____ alternative approved container, _____ dispose in approved landfill, _____other:

9. Name, address and phone of approved landfill for asbestos disposal:

10. CERTIFICATION: I certify the information submitted was collected under my direction or supervision, and is to the best of my knowledge true, accurate and complete

signature title lic. no. date

CERTIFICATE OF WORKER'S RELEASE

DATE: _____

TO: _____
(Insert Owner's Name and Address)

RE: _____
(Insert Project Name and Address)

In consideration of my employment by _____ in
(Contractor)
connection with the removal and disposal of asbestos, or other work in asbestos-contaminated work areas, and in consideration of the sum of ONE AND NO/100 ($1.00) DOLLAR and other good and valuable consideration in hand paid, at and before the sealing and delivery of these presents, the receipt, sufficiency, and adequacy of which are hereby acknowledged, the undersigned does hereby acknowledge, warrant, represent, covenant, and agree as follows:

1. I acknowledge and understand that I have been or will be employed in connection with the removal of, disposal of, or other treatment to, asbestos, or other work in asbestos-contaminated work areas, and I acknowledge that in handling asbestos and breathing asbestos dust, including, but not limited to, THE FACT THAT ASBESTOS CAN CAUSE ASBESTOSIS AND IS A KNOWN CARCINOGEN, AND CAN THEREFORE CAUSE VARIOUS TYPES OF CANCER.

2. I acknowledge and understand that ANY CONTACT WITH ASBESTOS, WHETHER IT CAN BE SEEN OR NOT, MAY CAUSE ASBESTOSIS AND VARIOUS FORMS OF CANCER, WHICH MAY NOT SHOW UP FOR MANY YEARS, AND I covenant and agree faithfully to take all precautions required of me.

3. I knowingly assume all risks in connection with potential exposure to asbestos and I do hereby release and forever discharge Owner, Architect, independent laboratory or engineers employed by the Owner or Architect,

and all of their directors, officers, employees, nominees, personal representatives, affiliates, successors, and assigns from and against any and all liability whatsoever, at common law or otherwise, except any rights which the undersigned may have under the provisions of the applicable Workmen's Compensation Laws. Expect as specifically set forth herein, I hereby waive and relinquish any and all claims of every nature which I now have or may have or claim to have which are in any way, directly or indirectly related to exposure of asbestos and asbestos-containing materials.

Name of Worker (Must be typed)	Signature of Worker (As acknowledgement of reading this page of this two-page Certificate.)

4. I hereby warrant and represent that I have not been disabled, laid-off, or compensated in damages or otherwise, because of the disease of asbestosis.

SIGNATURE_____

SOCIAL SECURITY NUMBER_____

SIGNED IN PRESENCE OF:

_____
Notary No. and Seal

(Submit one copy for each employee prior to employee staring work.)

SPECIAL ENDORSEMENT (INSURANCE)

Attached to and forming a part of Policy No. _____ of the _____ issued at is _____ Agency.
(Name of Insurance Company) (City) (State)

Date of endorsement _____ for

_____
(Name of Project)

In consideration of the premium for which the policy is written and proper rate adjustment when applicable, the insurance company agrees as follows:

The insurance company agrees that this policy shall not be cancelled, changed, allowed to lapse, or expire until 30 days after the Owner has received written notice thereof as evidenced by return receipt of registered letter or until such time as other valid and effective insurance coverage acceptable in every respect to the Owner and providing protection equal to protection called for in the policy shown below shall have been received, accepted, and acknowledged by the Owner.

The insurance company acknowledges and agrees that this policy is applicable for Contractor or Subcontractor whose business is asbestos removal or asbestos abatement.

Any other provisions to the contrary notwithstanding, coverage under this policy shall

specifically include all operations of asbestos abatement required by the project named above.

The forgoing insurance provisions have been incorporated into the reference and are hereby made a part of Insurance Policy No. _____, this _____ day of _____, 19__.

_____
(Name of Company)

_____
(Signature of Authorized Representative)

EMPLOYEE SAFETY INSTRUCTION FORM

Employee Name: _____

Employee Address: _____

Employee Telephone No.: _____

Union Card Number: _____

Classification of Worker: _____

Have you had in the past, or present, any respiratory problems?

Yes_____No _____

Have you worked in the past with asbestos or fiberglass type materials?

Yes _____No _____

The project you will be working on involves the use of asbestos and the removal of the asbestos from the building. Asbestos is considered a health hazard.

The company is supplying all necessary safety clothing and working conditions required and necessary for your protection from asbestos hazard.

You shall be instructed at commencement of the job on the required use of safety equipment, clothing, working conditions and procedures. These must be rigidly adhered to. Smoking is not permitted in the work areas.

Disregarding of safety instructions shall result in instant dismissal.

I acknowledge that safety instructions have been given to my by the company at my work commencement and I am thoroughly conversant with them and have answered the above questions truthfully.

Signed _____
Employee

Date _____

(Submit one copy for each employee prior to employee starting work.)

RESPIRATOR TRAINING CERTIFICATION

PROJECT NAME: _____

I hereby certify that I have been trained in the use of each type of respiratory protection equipment required for use on this Project. The training included the following:

1. Explanation of dangers related to misuse.

2. Instruction on putting on, fitting, testing and wearing the respirator.

3. Instruction on inspection, cleaning and maintaining the respirator.

4. Instruction on emergency situations.

I further certify that I understand the use, care and inspection of the respirator and have tested and work the unit.

Signed: _____

Date: _____

Superintendent's Signature: _____

(Submit one copy for each employee prior to employee starting work)

CERTIFICATE OF VISITOR'S RELEASE

DATE: _____

TO: _____
(Insert Project Name and Address)

In consideration of my visit(s) to the above named project in connection with the removal and disposal of asbestos, or other work in asbestos-contaminated work areas, the undersigned does hereby acknowledge, warrant, represent, covenant, and agree as follows:

1. I acknowledge and understand that I have been or will be employed in connection with the removal of, disposal of, or other treatment to, asbestos, or other work in asbestos

   contaminated work areas, and I acknowledge that I have been advised of and I understand the dangers inherent in handling asbestos and breathing asbestos dust, including, but not limited to, THE FACT THAT ASBESTOS CAN CAUSE ASBESTOSIS AND IS A KNOWN CARCINOGEN AND CAN, THEREFORE, CAUSE VARIOUS TYPES OF CANCER.

2. I acknowledge and understand that ANY CONTACT WITH ASBESTOS, WHETHER IT CAN BE SEEN OR NOT, MAY CAUSE ASBESTOSIS AND VARIOUS FORMS OR CANCER, WHICH MAY NOT SHOW UP FOR MANY YEARS, and I

covenant and agree faithfully to take all precautions required of me.

_____

Signature of Visitor
(as acknowledgement of reading this page 1 of this two-page Certificate)

3. I knowingly assume all risks in connection with potential exposure to asbestos and I do hereby, for myself and my heirs at law, release and forever discharge Owner, Owner's Representative, Architect, independent testing laboratory or engineers employed by the Owner, Owner's Representative, Architect, and all of their directors, officers, employees, nominees, personal representatives, affiliates, successor, and assigns from and against any and all liability whatsoever, at common law or otherwise, except any rights the applicable workmen's compensation laws. Except as specifically set forth herein I hereby waive and relinquish any and all claims of every nature which I now have or may have or claim to have which are in any way, directly or indirectly, related to exposure to asbestos and asbestos-containing materials.

4. I hereby warrant and represent that I have not been disabled, laid-off, or compensated in damages or otherwise, because of the disease of asbestosis.

Signature_____

Social Security Number_____

Signed in presence of:

_____
(General Superintendent)

(Submit one copy for each visitor.)

-- End of Section --